FIG. 1

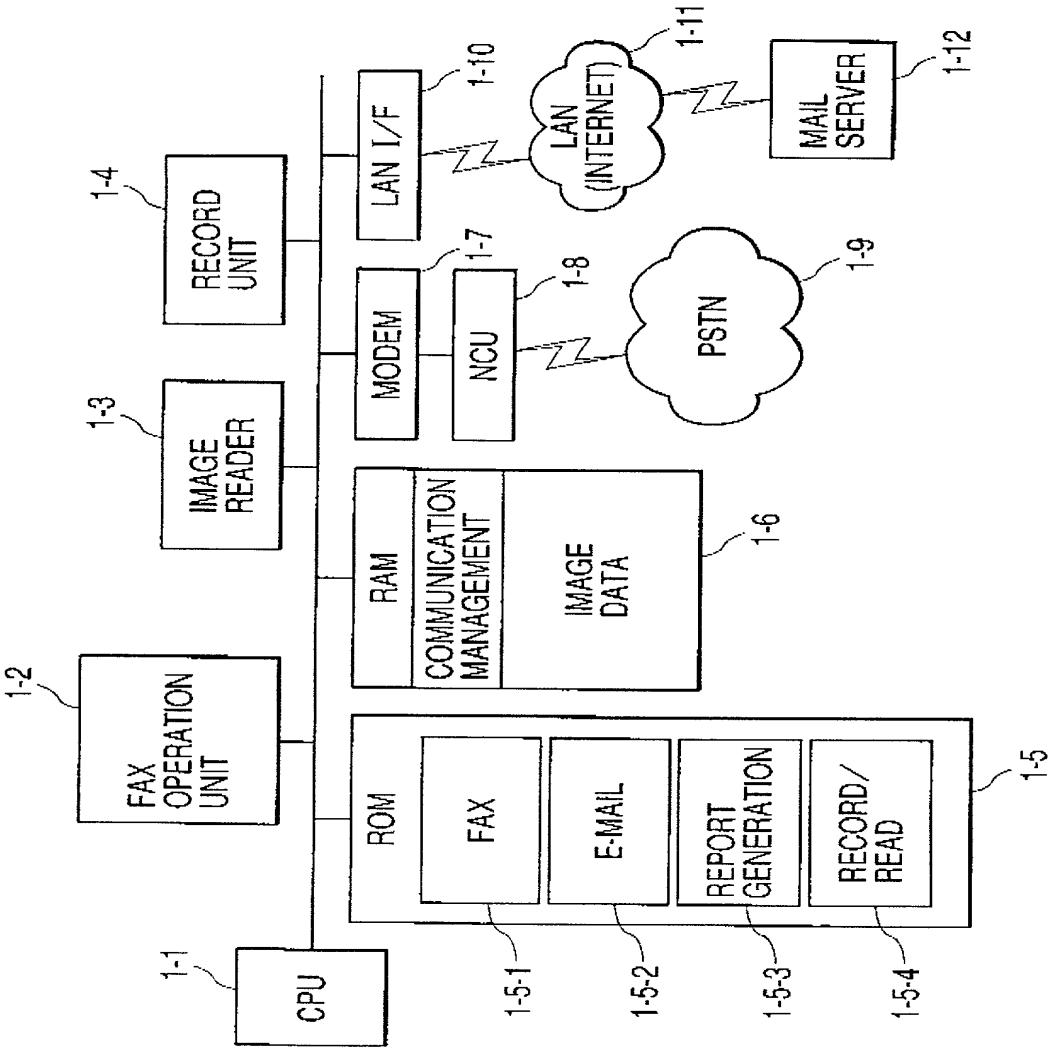

CPU
1-1
FAX OPERATION UNIT
1-2
IMAGE READER
1-3
RECORD UNIT
1-4
ROM
FAX
E-MAIL
REPORT GENERATION
RECORD/ READ
1-5
1-5-1
1-5-2
1-5-3
1-5-4
RAM
COMMUNICATION MANAGEMENT
IMAGE DATA
1-6
MODEM
1-7
NCU
1-8
PSTN
1-9
LAN I/F
1-10
LAN (INTERNET)
1-11
MAIL SERVER
1-12

FIG. 2

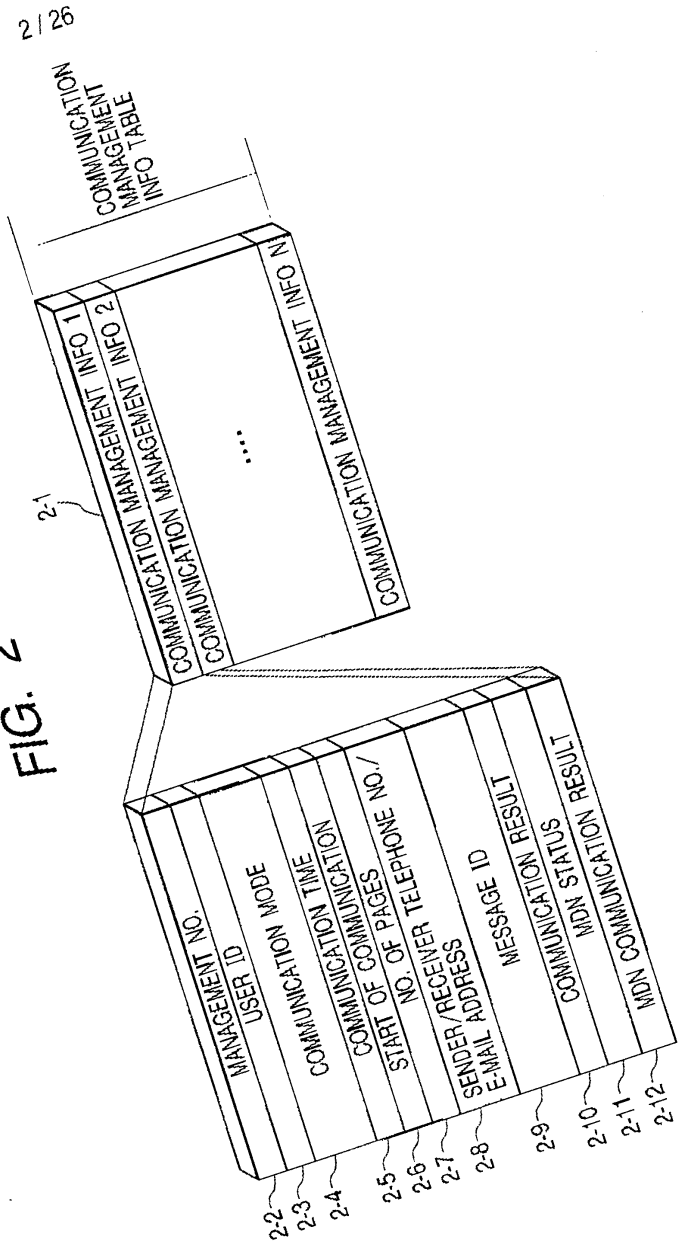

COMMUNICATION MANAGEMENT INFO TABLE
2-1
COMMUNICATION MANAGEMENT INFO 1
COMMUNICATION MANAGEMENT INFO 2
....
COMMUNICATION MANAGEMENT INFO N
MANAGEMENT NO.
USER ID
COMMUNICATION MODE
COMMUNICATION TIME
COMMUNICATION
START OF COMMUNICATION
NO. OF PAGES
SENDER/RECEIVER TELEPHONE NO./
E-MAIL ADDRESS
MESSAGE ID
COMMUNICATION RESULT
MDN STATUS
MDN COMMUNICATION RESULT
2-2
2-3
2-4
2-5
2-6
2-7
2-8
2-9
2-10
2-11
2-12

FIG. 3

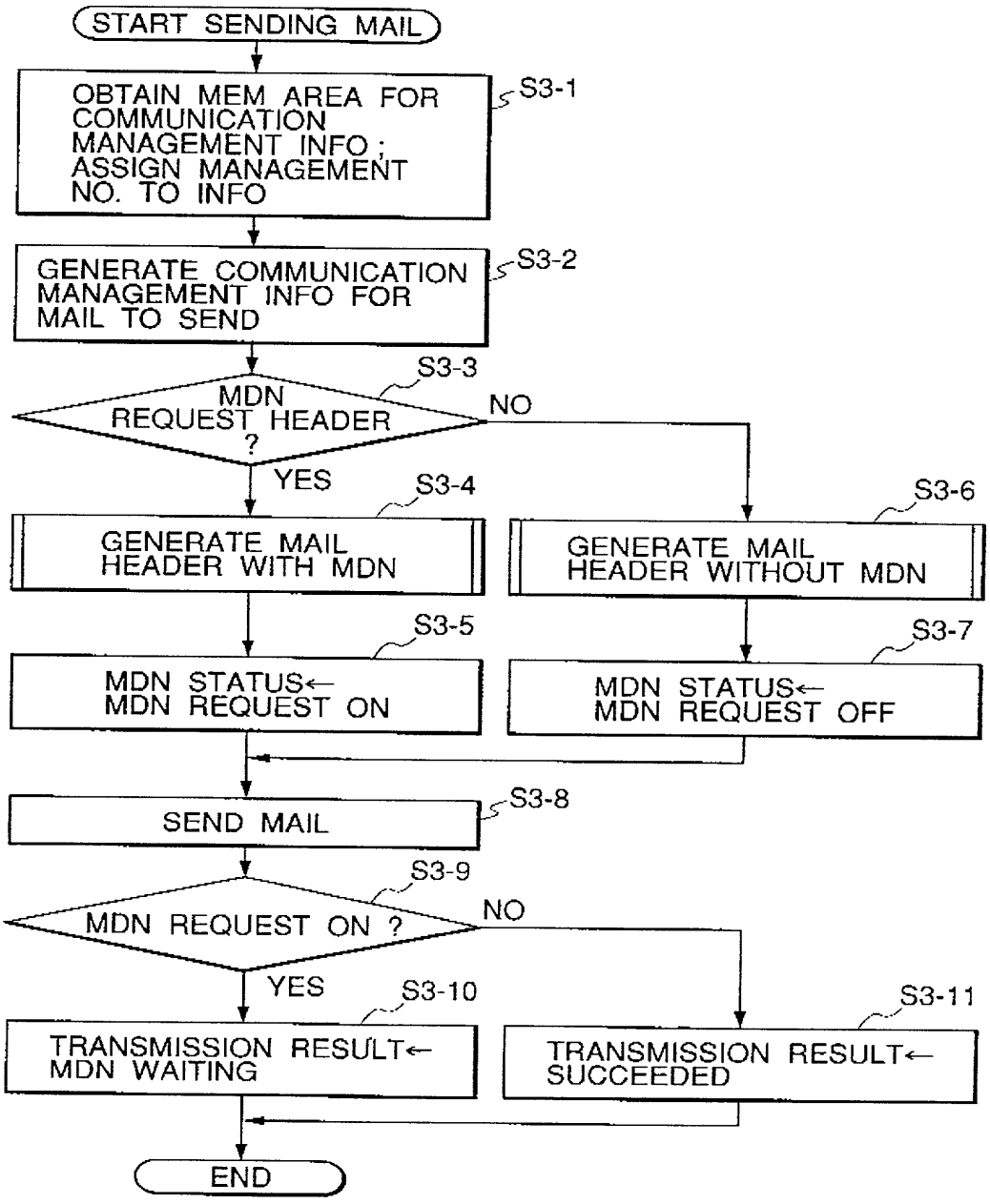

START SENDING MAIL
OBTAIN MEM AREA FOR COMMUNICATION MANAGEMENT INFO ; ASSIGN MANAGEMENT NO. TO INFO
S3-1
GENERATE COMMUNICATION MANAGEMENT INFO FOR MAIL TO SEND
S3-2
MDN REQUEST HEADER ?
S3-3
NO
YES
GENERATE MAIL HEADER WITH MDN
S3-4
GENERATE MAIL HEADER WITHOUT MDN
S3-6
MDN STATUS← MDN REQUEST ON
S3-5
MDN STATUS← MDN REQUEST OFF
S3-7
SEND MAIL
S3-8
MDN REQUEST ON ?
S3-9
NO
YES
TRANSMISSION RESULT← MDN WAITING
S3-10
TRANSMISSION RESULT← SUCCEEDED
S3-11
END

FIG. 4

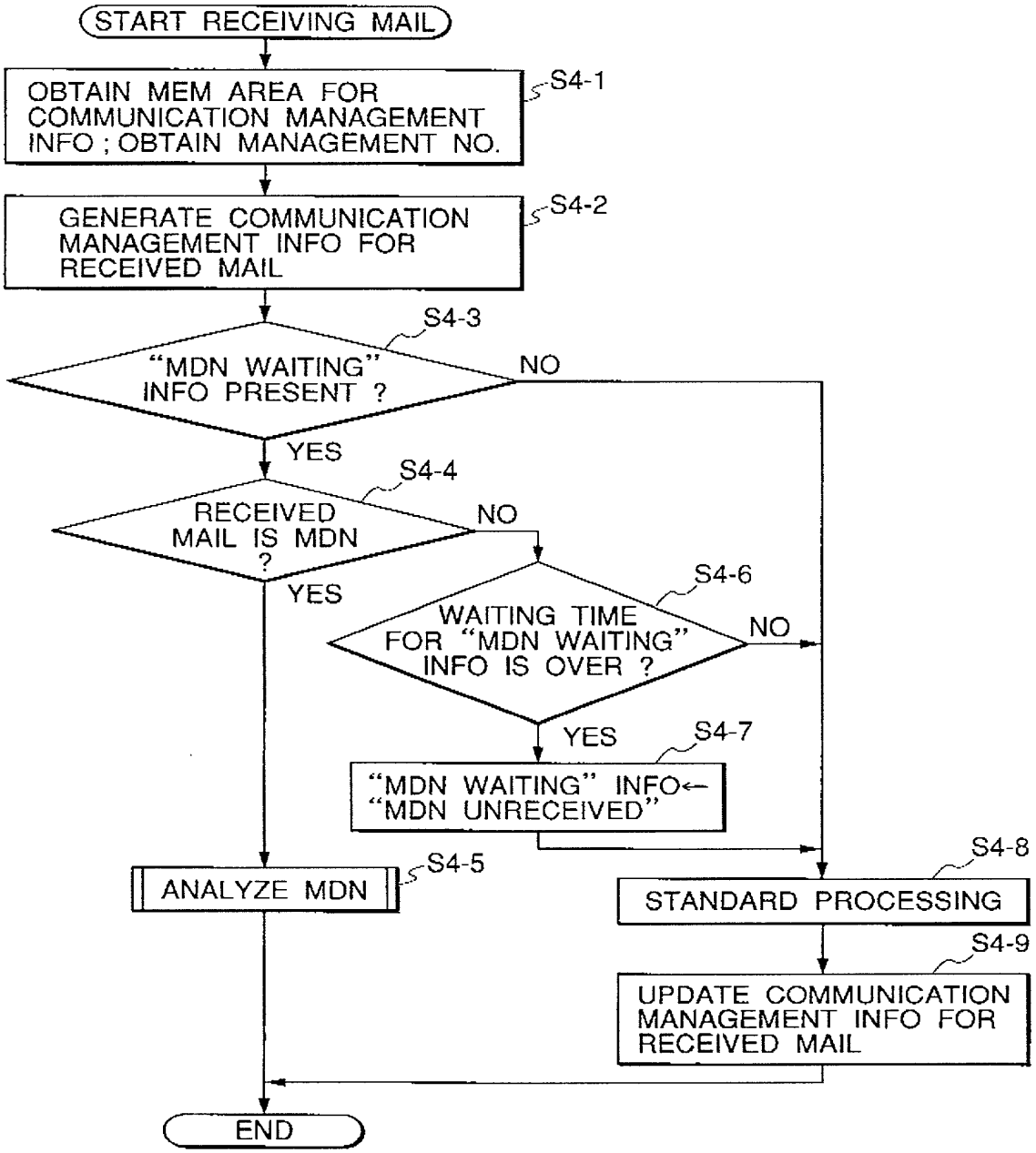

START RECEIVING MAIL
OBTAIN MEM AREA FOR COMMUNICATION MANAGEMENT INFO ; OBTAIN MANAGEMENT NO.
S4-1
GENERATE COMMUNICATION MANAGEMENT INFO FOR RECEIVED MAIL
S4-2
"MDN WAITING" INFO PRESENT ?
S4-3
NO
YES
RECEIVED MAIL IS MDN ?
S4-4
NO
YES
WAITING TIME FOR "MDN WAITING" INFO IS OVER ?
S4-6
NO
YES
"MDN WAITING" INFO← "MDN UNRECEIVED"
S4-7
ANALYZE MDN
S4-5
STANDARD PROCESSING
S4-8
UPDATE COMMUNICATION MANAGEMENT INFO FOR RECEIVED MAIL
S4-9
END

FIG. 5

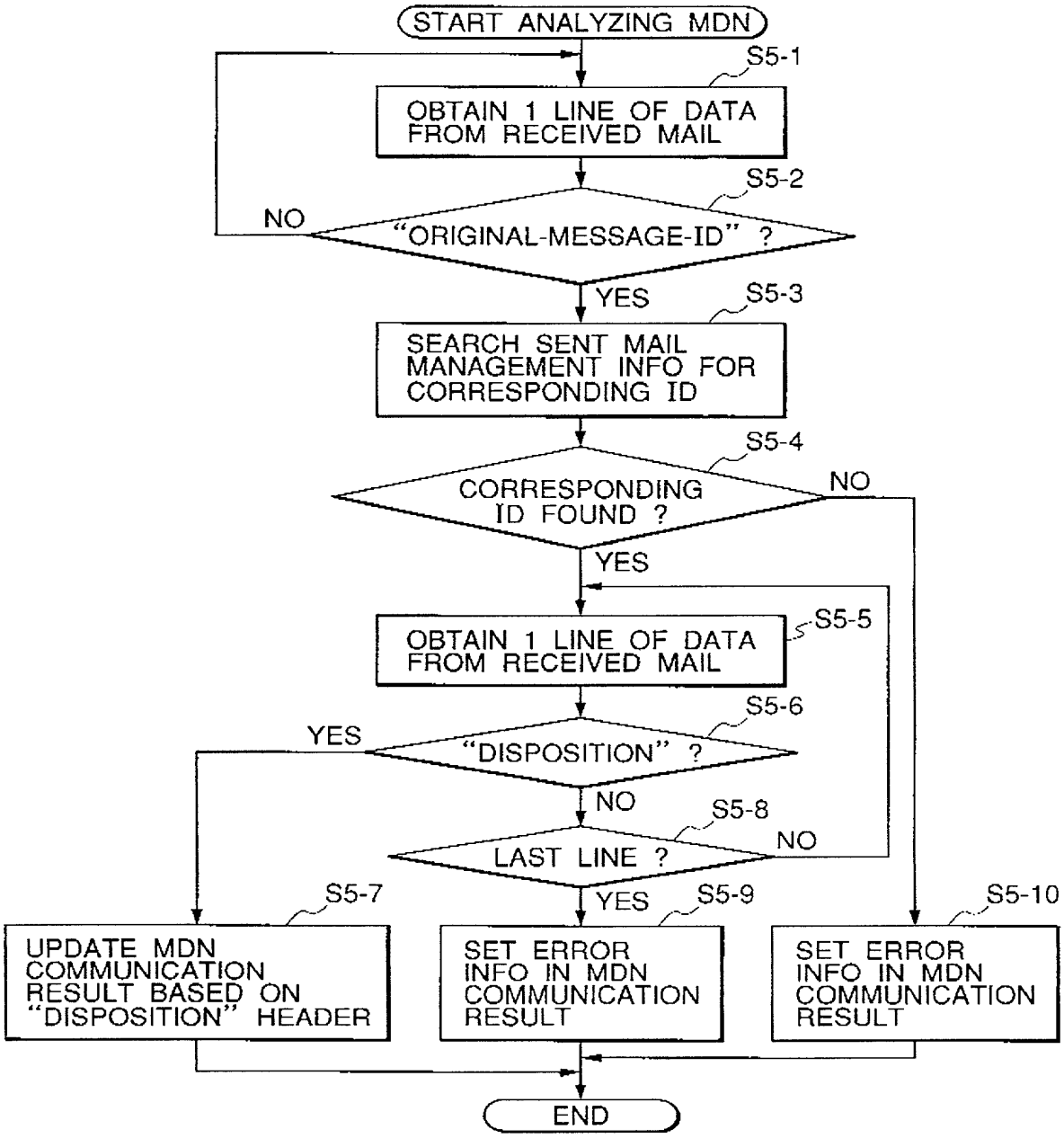

START ANALYZING MDN
S5-1
OBTAIN 1 LINE OF DATA FROM RECEIVED MAIL
S5-2
NO
"ORIGINAL-MESSAGE-ID" ?
YES
S5-3
SEARCH SENT MAIL MANAGEMENT INFO FOR CORRESPONDING ID
S5-4
CORRESPONDING ID FOUND ?
NO
YES
S5-5
OBTAIN 1 LINE OF DATA FROM RECEIVED MAIL
S5-6
YES
"DISPOSITION" ?
NO
S5-8
LAST LINE ?
NO
YES
S5-7
S5-9
S5-10
UPDATE MDN COMMUNICATION RESULT BASED ON "DISPOSITION" HEADER
SET ERROR INFO IN MDN COMMUNICATION RESULT
SET ERROR INFO IN MDN COMMUNICATION RESULT
END

FIG. 6

FAX 0297 12 3456
I-FAX aaa@canon.co.jp CANON 1999 12/28 14:51 P. 001

****
*** COMMUNICATION ***
*** MANAGEMENT REPORT ***
****

START	RECEIVER	SENDER	No.	MODE	PAGES	RESULT
*12/28 14:26	701928		0001	SENDING	1	NG 00' 00
						0 #0995
*12/28 14:31	abc@aaa.bbb.co.jp	efg@ccc.ddd.co.jp	0002	SENDING MDN UNRECEIVED I-FAX	1	-- 00' 07
*12/28 14:31	nop@aaa.bbb.co.jp	klm@ccc.ddd.co.jp	0003	SENDING MDN CONFIRMED I-FAX	3	OK 00' 23
*12/28 14:38			5001	AUTO-RECEIVING G3	1	OK 00' 04
*12/28 14:39			5002	AUTO-RECEIVING I-FAX	1	OK 00' 31
*12/28 14:40			5003	AUTO-RECEIVING I-FAX	1	OK 00' 21
*12/28 14:40			5004	AUTO-RECEIVING MDN	—	OK 01' 08
*12/28 14:43			5005	AUTO-RECEIVING G3	2	OK 00' 28
*12/28 14:41			5006	AUTO-RECEIVING ECM	2	OK 01' 13
*12/28 14:49	def@aaa.bbb.co.jp	hij@abc.def.co.jp	0004	SENDING I-FAX	1	OK 00' 06
*12/28 14:50			5007	AUTO-RECEIVING G3	1	OK 00' 06

FIG. 7

I-FAX aaa@canon.co.jp → bbb@canon.co.jp 2000 01/06 10:24 P.001

****
*** TRANSMISSION ***
*** RESULT REPORT ***
****

TRANSMISSION SUCCEEDED.

NO.	0006
RECEIVER ADDRESS	abc@canon.co.jp
RECEIVER NAME	CANON
START	01/06 11:12
DURATION	00'06
PAGES	1
RESULT	OK [MDN CONFIRMED]

FIG. 8

I-FAX aaa@canon. co. jp → abc@canon. co. jp 2000 01/06 10:24 P. 001

****
*** TRANSMISSION ***
*** RESULT REPORT ***
****

TRANSMISSION FAILED.

NO.	0002
RECEIVER ADDRESS	abc@canon. co.jp
RECEIVER NAME	CANON
START	01/06 11:12
DURATION	00' 06
PAGES	1
RESULT	NG [MDN CONFIRMED]

FIG. 9

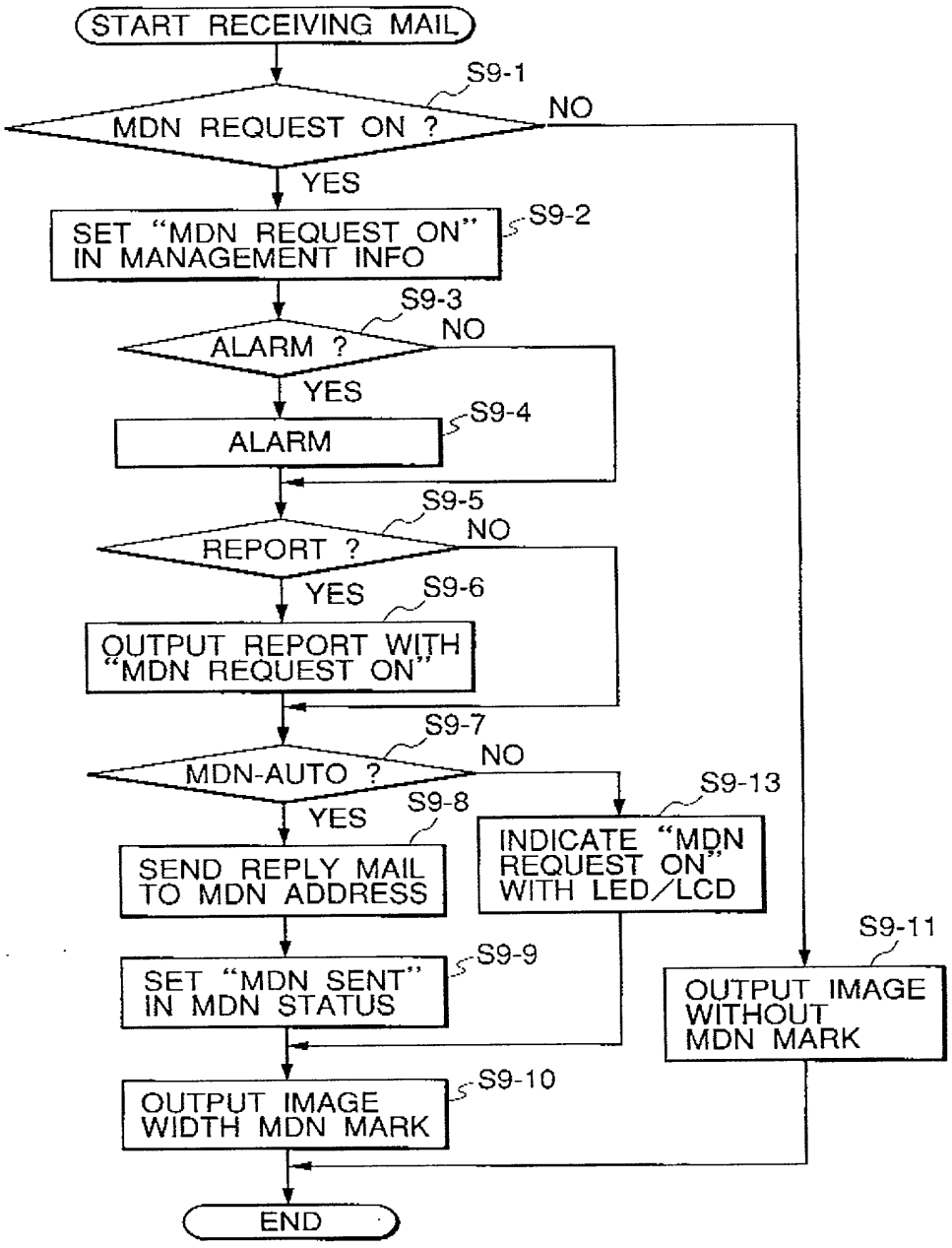

START RECEIVING MAIL
S9-1
MDN REQUEST ON ?
NO
YES
SET "MDN REQUEST ON" IN MANAGEMENT INFO
S9-2
S9-3
ALARM ?
NO
YES
ALARM
S9-4
S9-5
REPORT ?
NO
YES
S9-6
OUTPUT REPORT WITH "MDN REQUEST ON"
S9-7
MDN-AUTO ?
NO
YES
S9-8
SEND REPLY MAIL TO MDN ADDRESS
S9-13
INDICATE "MDN REQUEST ON" WITH LED/LCD
S9-9
SET "MDN SENT" IN MDN STATUS
S9-11
OUTPUT IMAGE WITHOUT MDN MARK
S9-10
OUTPUT IMAGE WIDTH MDN MARK
END

FIG. 10

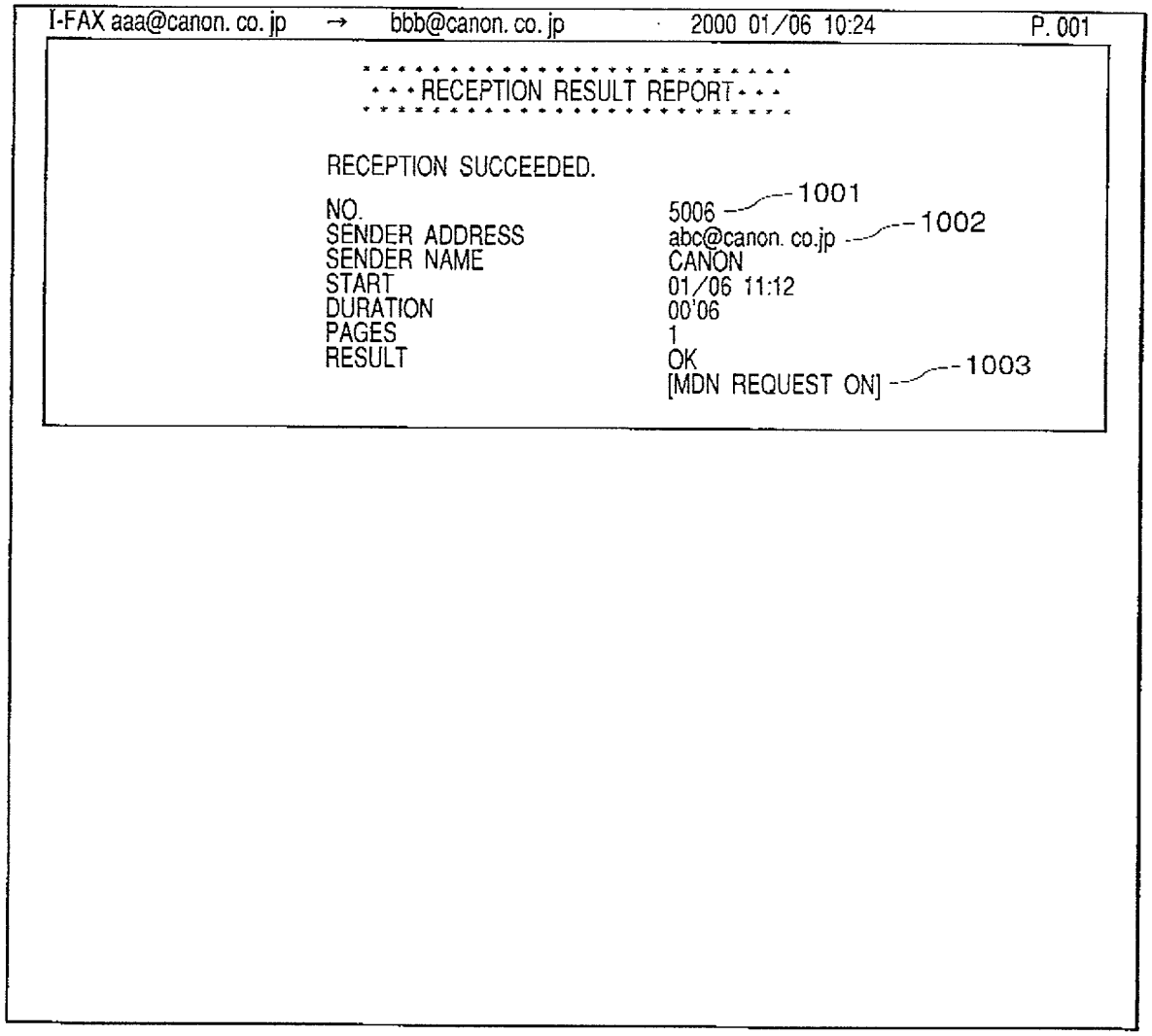

I-FAX aaa@canon. co. jp → bbb@canon. co. jp 2000 01/06 10:24 P. 001
RECEPTION RESULT REPORT
RECEPTION SUCCEEDED.
NO. 5006
SENDER ADDRESS abc@canon. co.jp
SENDER NAME CANON
START 01/06 11:12
DURATION 00'06
PAGES 1
RESULT OK
[MDN REQUEST ON]
1001
1002
1003

FIG. 11

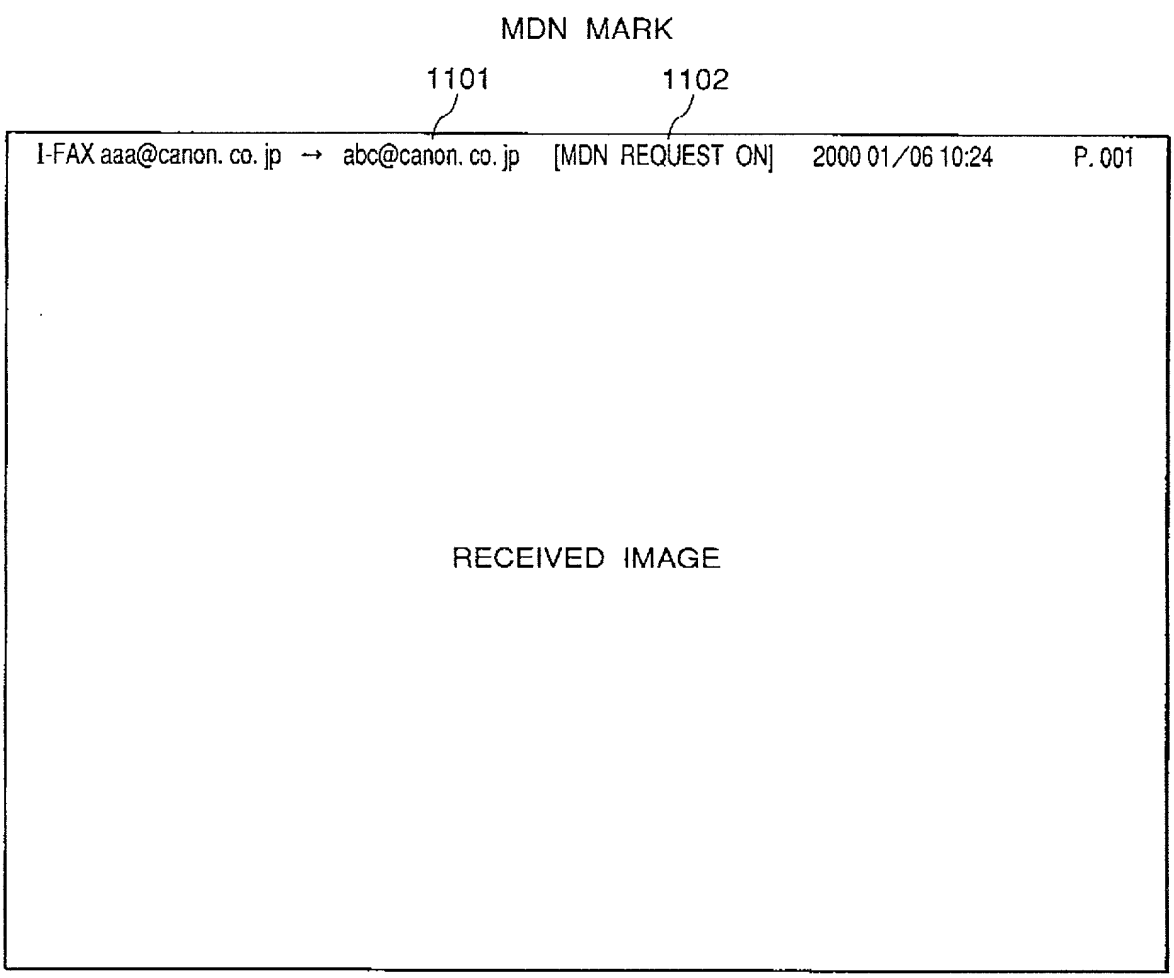

MDN MARK
1101
1102
I-FAX aaa@canon. co. jp → abc@canon. co. jp [MDN REQUEST ON] 2000 01/06 10:24 P. 001
RECEIVED IMAGE

FIG. 12

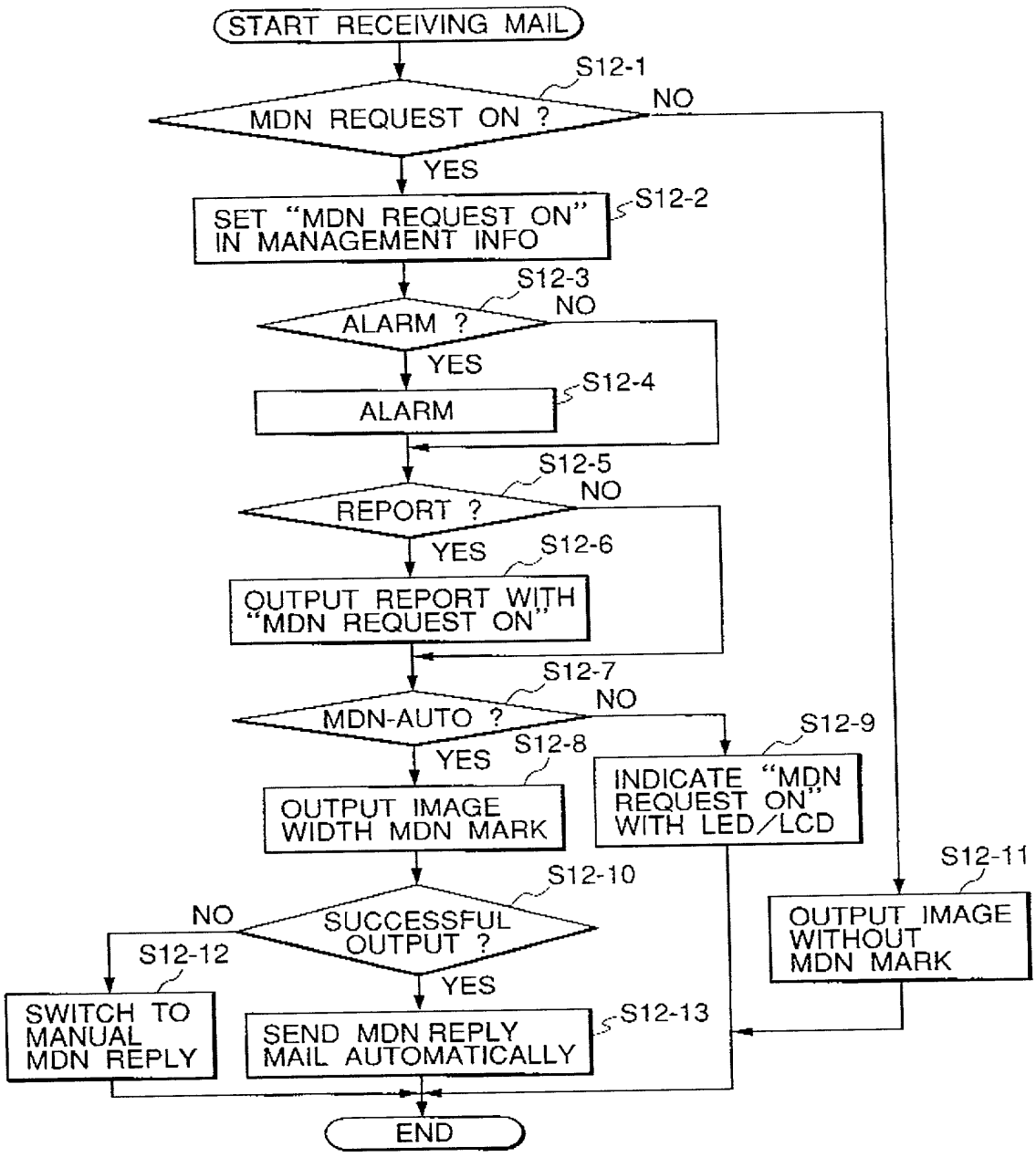

START RECEIVING MAIL
S12-1
MDN REQUEST ON ?
NO
YES
SET "MDN REQUEST ON" IN MANAGEMENT INFO
S12-2
S12-3
ALARM ?
NO
YES
ALARM
S12-4
S12-5
REPORT ?
NO
YES
S12-6
OUTPUT REPORT WITH "MDN REQUEST ON"
S12-7
MDN-AUTO ?
NO
YES
S12-8
OUTPUT IMAGE WIDTH MDN MARK
S12-9
INDICATE "MDN REQUEST ON" WITH LED/LCD
S12-10
SUCCESSFUL OUTPUT ?
NO
YES
S12-12
SWITCH TO MANUAL MDN REPLY
SEND MDN REPLY MAIL AUTOMATICALLY
S12-13
S12-11
OUTPUT IMAGE WITHOUT MDN MARK
END

FIG. 13

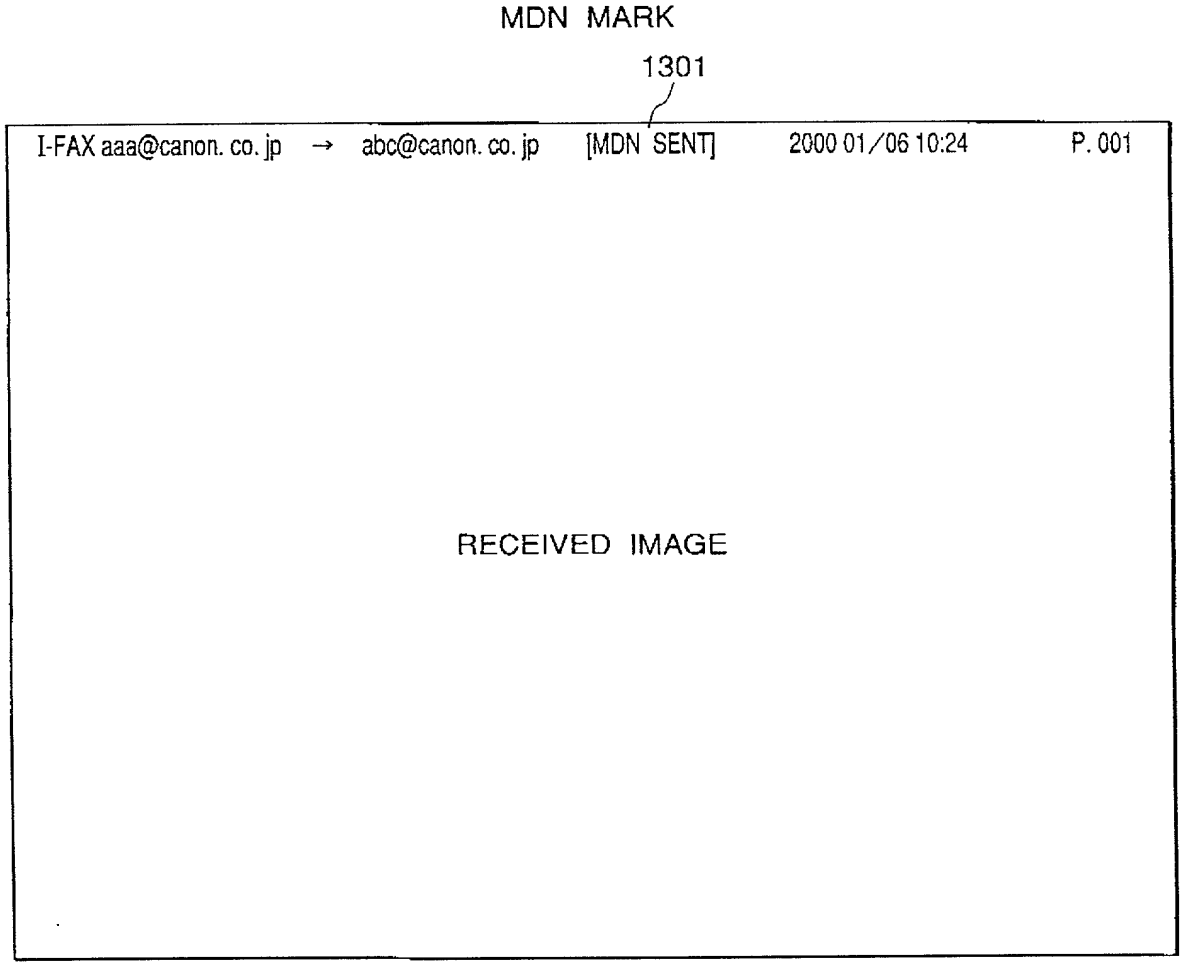

MDN MARK
1301
I-FAX aaa@canon. co. jp → abc@canon. co. jp [MDN SENT] 2000 01/06 10:24 P. 001
RECEIVED IMAGE

FIG. 14

FAX 0297 12 3456
I-FAX aaa@canon.co.jp CANON 1999 12/28 14:51 P.001

****
*** COMMUNICATION ***
*** MANAGEMENT REPORT ***
****

START	RECEIVER	SENDER	No.	MODE			PAGES	RESULT	
*12/28 14:26	701928		0001	SENDING			1	NG	00'00
								0	#0995
*12/28 14:31	abc@aaa.bbb.co.jp	efg@ccc.ddd.co.jp	0002	SENDING	MDN UNSENT	I-FAX	1	--	00'07
*12/28 14:31	nop@aaa.bbb.co.jp	klm@ccc.ddd.co.jp	0003	SENDING	MDN SENT	I-FAX	3	OK	00'23
*12/28 14:38			5001	AUTO-RECEIVING		G3	1	OK	00'04
*12/28 14:39			5002	AUTO-RECEIVING	MDN UNSENT	I-FAX	1	OK	00'31
*12/28 14:40			5003	AUTO-RECEIVING	MDN SENT	I-FAX	1	OK	00'21
*12/28 14:40			5004	AUTO-RECEIVING		MDN	—	OK	01'08
*12/28 14:43			5005	AUTO-RECEIVING	MDN REQUEST OFF	I-FAX	2	OK	00'28
*12/28 14:41			5006	AUTO-RECEIVING		ECM	2	OK	01'13
*12/28 14:49	def@aaa.bbb.co.jp	hij@abc.def.co.jp	0004	SENDING		I-FAX	1	OK	00'06
*12/28 14:50			5007	AUTO-RECEIVING		G3	1	OK	00'06

FIG. 15

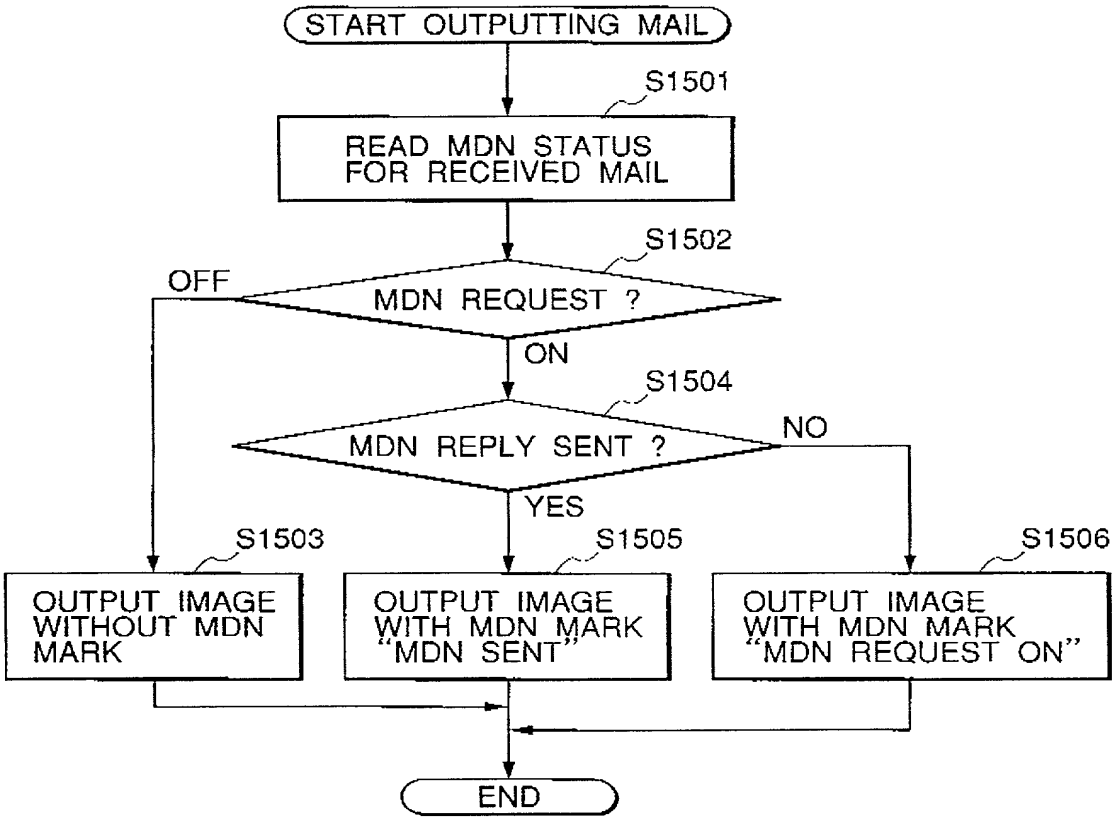

START OUTPUTTING MAIL
S1501
READ MDN STATUS FOR RECEIVED MAIL
S1502
MDN REQUEST ?
OFF
ON
S1504
MDN REPLY SENT ?
NO
YES
S1503
OUTPUT IMAGE WITHOUT MDN MARK
S1505
OUTPUT IMAGE WITH MDN MARK "MDN SENT"
S1506
OUTPUT IMAGE WITH MDN MARK "MDN REQUEST ON"
END

FIG. 16

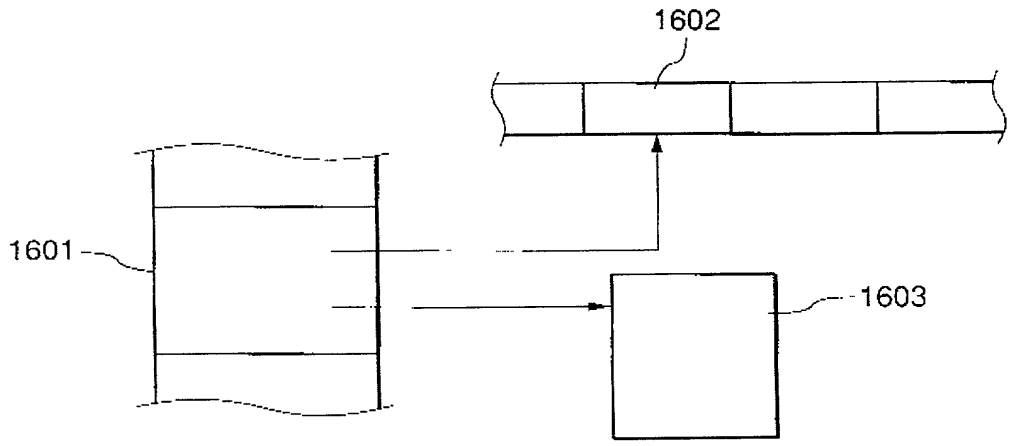


FIG. 17

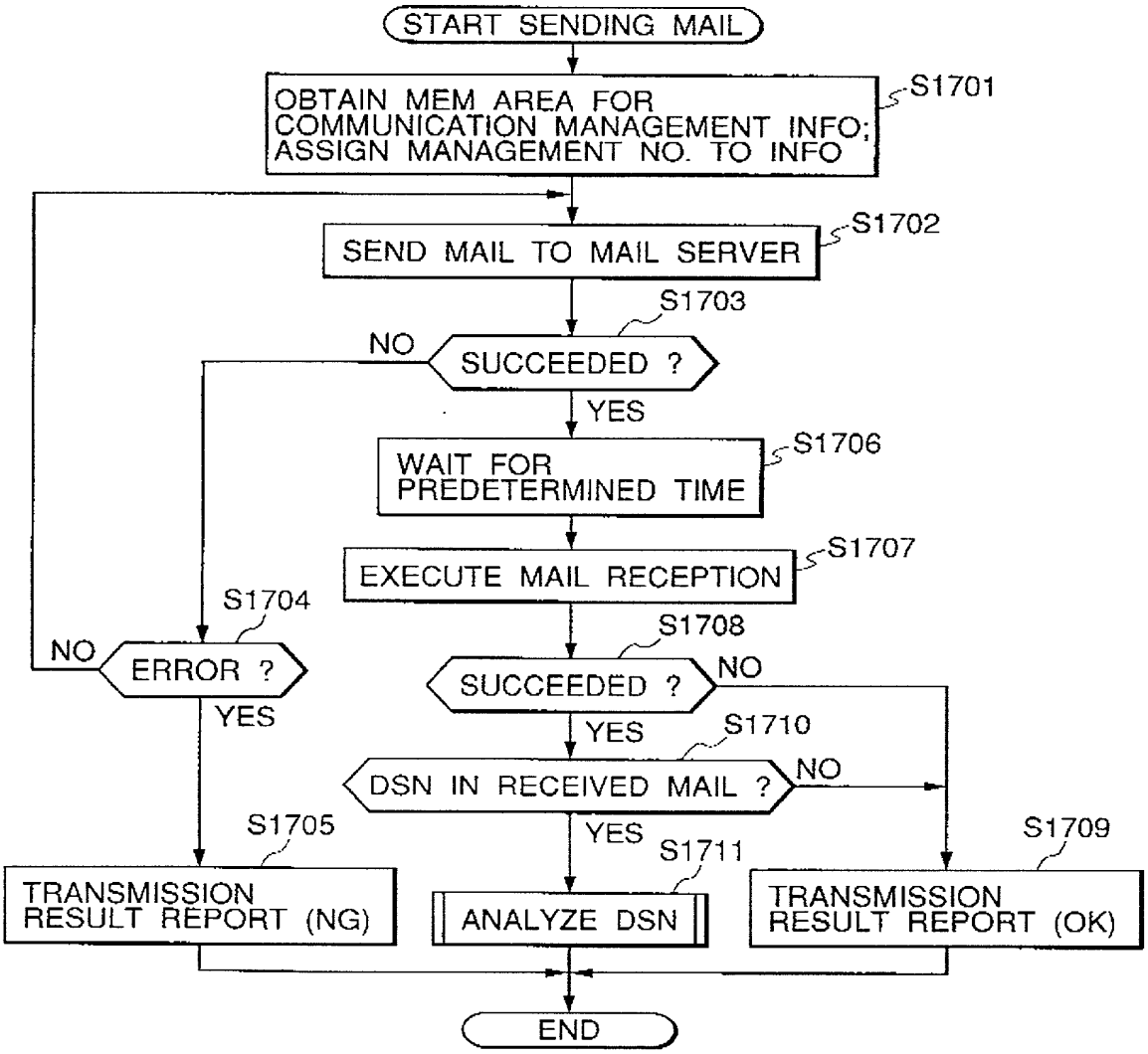

START SENDING MAIL
OBTAIN MEM AREA FOR COMMUNICATION MANAGEMENT INFO; ASSIGN MANAGEMENT NO. TO INFO
S1701
SEND MAIL TO MAIL SERVER
S1702
S1703
SUCCEEDED ?
NO
YES
WAIT FOR PREDETERMINED TIME
S1706
EXECUTE MAIL RECEPTION
S1707
S1704
ERROR ?
NO
YES
S1708
SUCCEEDED ?
NO
YES
S1710
DSN IN RECEIVED MAIL ?
NO
YES
S1705
TRANSMISSION RESULT REPORT (NG)
S1711
ANALYZE DSN
S1709
TRANSMISSION RESULT REPORT (OK)
END

FIG. 18

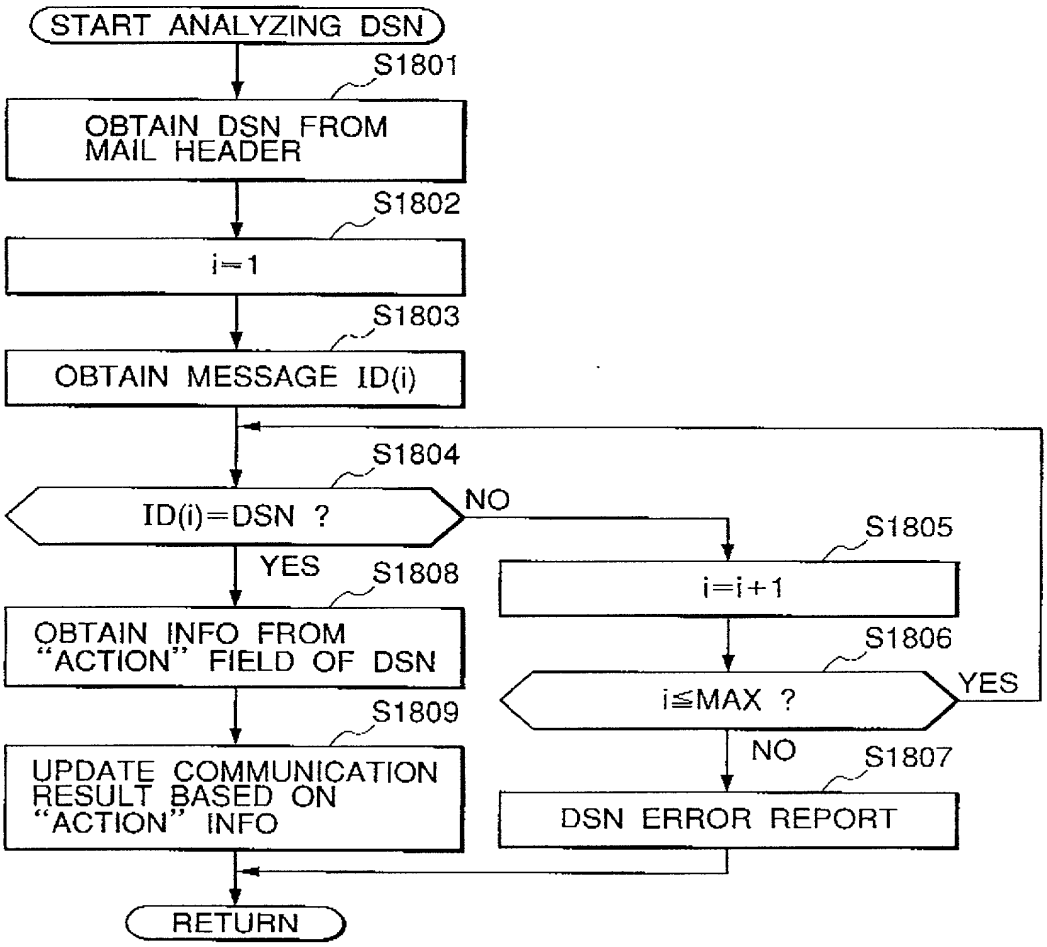

START ANALYZING DSN
S1801
OBTAIN DSN FROM MAIL HEADER
S1802
i=1
S1803
OBTAIN MESSAGE ID(i)
S1804
ID(i)=DSN ?
NO
YES
S1805
i=i+1
S1806
i≦MAX ?
YES
NO
S1807
DSN ERROR REPORT
S1808
OBTAIN INFO FROM "ACTION" FIELD OF DSN
S1809
UPDATE COMMUNICATION RESULT BASED ON "ACTION" INFO
RETURN

FIG. 19

FAX 0297 12 3456
I-FAX aaa@canon.co.jp CANON 1999 12/28 14:51 P. 001

****
*** COMMUNICATION ***
MANAGEMENT REPORT
****

START	RECEIVER	SENDER	No.	MODE		PAGES	RESULT	
*12/28 14:26	701928		0001	SENDING		1	NG	00' 00
							0	#0995
*12/28 14:31	abc@aaa.bbb.co.jp	efg@ccc.ddd.co.jp	0002	SENDING	I-FAX	1	OK	00' 07
*12/28 14:31	nop@aaa.bbb.co.jp	klm@ccc.ddd.co.jp	0003	SENDING	I-FAX	3	NG	00' 23
*12/28 14:38			5001	AUTO-RECEIVING	G3	1	OK	00' 04
*12/28 14:39			5002	AUTO-RECEIVING	I-FAX	1	OK	00' 31
*12/28 14:40			5003	AUTO-RECEIVING	I-FAX	1	OK	00' 21
*12/28 14:40			5004	AUTO-RECEIVING	DSN	—	OK	01' 08
*12/28 14:43			5004	AUTO-RECEIVING	G3	2	OK	00' 28
*12/28 14:41			5006	AUTO-RECEIVING	ECM	2	OK	01' 13
*12/28 14:49	def@aaa.bbb.co.jp	hij@abc.def.co.jp	0004	SENDING	I-FAX	1	--	00' 06
*12/28 14:50			5007	AUTO-RECEIVING	G3	1	OK	00' 06

FIG. 20

I-FAX aaa@canon. co. jp → bbb@canon. co. jp 2000 01/06 10:24 P. 001

****
*** TRANSMISSION ***
*** RESULT REPORT ***
****

TRANSMISSION SUCCEEDED.

NO.	0006
RECEIVER ADDRESS	abc@canon. co.jp
RECEIVER NAME	CANON
START	01/06 11:12
DURATION	00' 06
PAGES	1
RESULT	OK

FIG. 21

I-FAX aaa@canon.co.jp → abc@canon.co.jp 2000 01/06 10:24 P.001

****
*** TRANSMISSION ***
*** RESULT REPORT ***
****

TRANSMISSION FAILED.

NO.	0002
RECEIVER ADDRESS	abc@canon.co.jp
RECEIVER NAME	CANON
START	01/06 11:12
DURATION	00'06
PAGES	1
RESULT	NG
	#0018 FAILED TO CONNECT TO SERVER.

FIG. 22

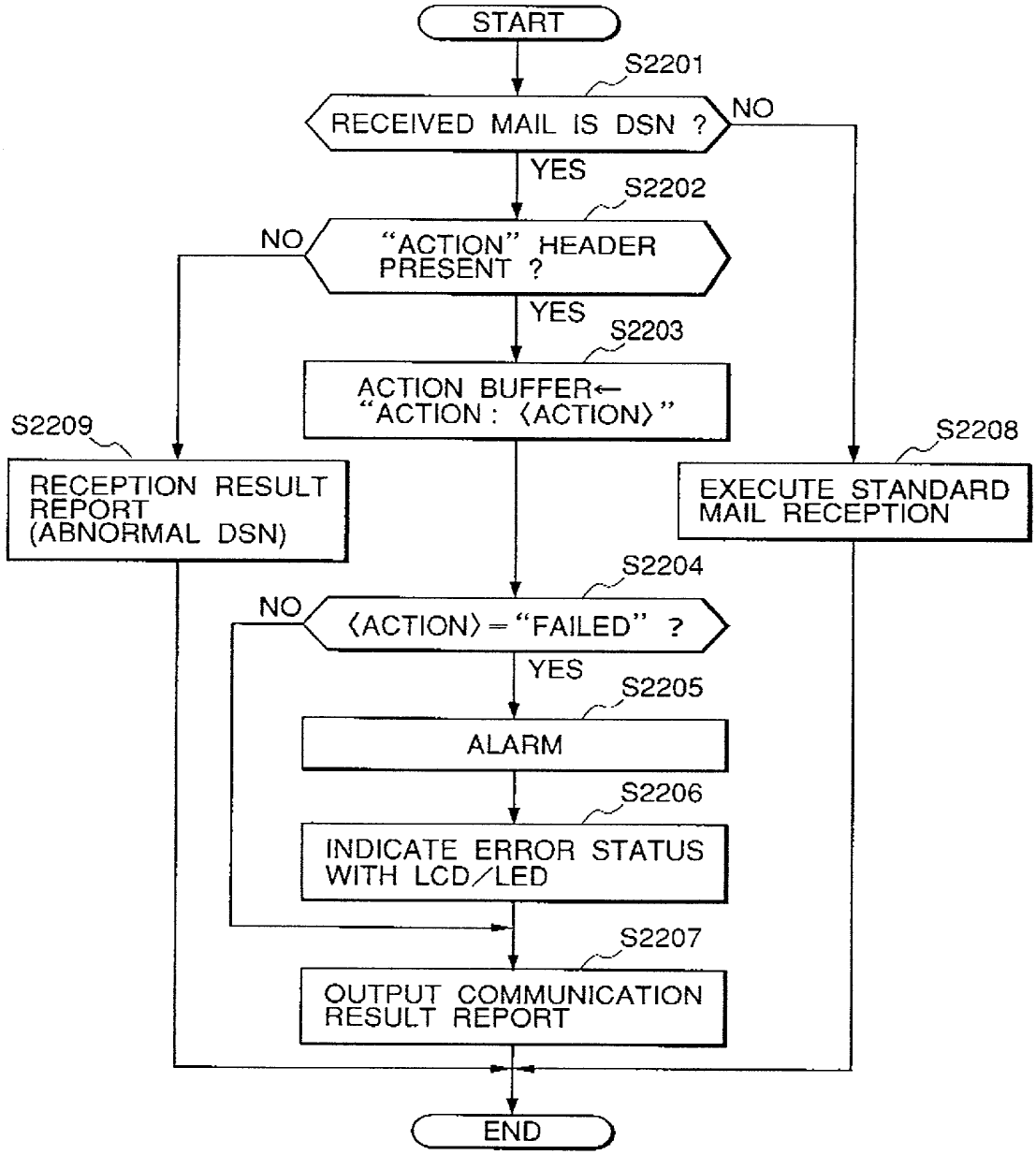

START
S2201
RECEIVED MAIL IS DSN ?
NO
YES
S2202
NO
"ACTION" HEADER PRESENT ?
YES
S2203
ACTION BUFFER← "ACTION : ⟨ACTION⟩"
S2209
RECEPTION RESULT REPORT (ABNORMAL DSN)
S2208
EXECUTE STANDARD MAIL RECEPTION
S2204
NO
⟨ACTION⟩ = "FAILED" ?
YES
S2205
ALARM
S2206
INDICATE ERROR STATUS WITH LCD/LED
S2207
OUTPUT COMMUNICATION RESULT REPORT
END

FIG. 23

I-FAX aaa@canon. co. jp → bbb@canon. co. jp 2000 01/06 10:24 P. 001

****
*** TRANSMISSION
*** RESULT REPORT ***
****

MAIL SERVER RETURNED ERROR NOTIFICATION.

NO.	0006
RECEIVER ADDRESS	abc@canon. co.jp
RECEIVER NAME	CANON
START	01/06 11:12
DURATION	00' 06
PAGES	1
RESULT	NG
	ACTION : FAILED

FIG. 24

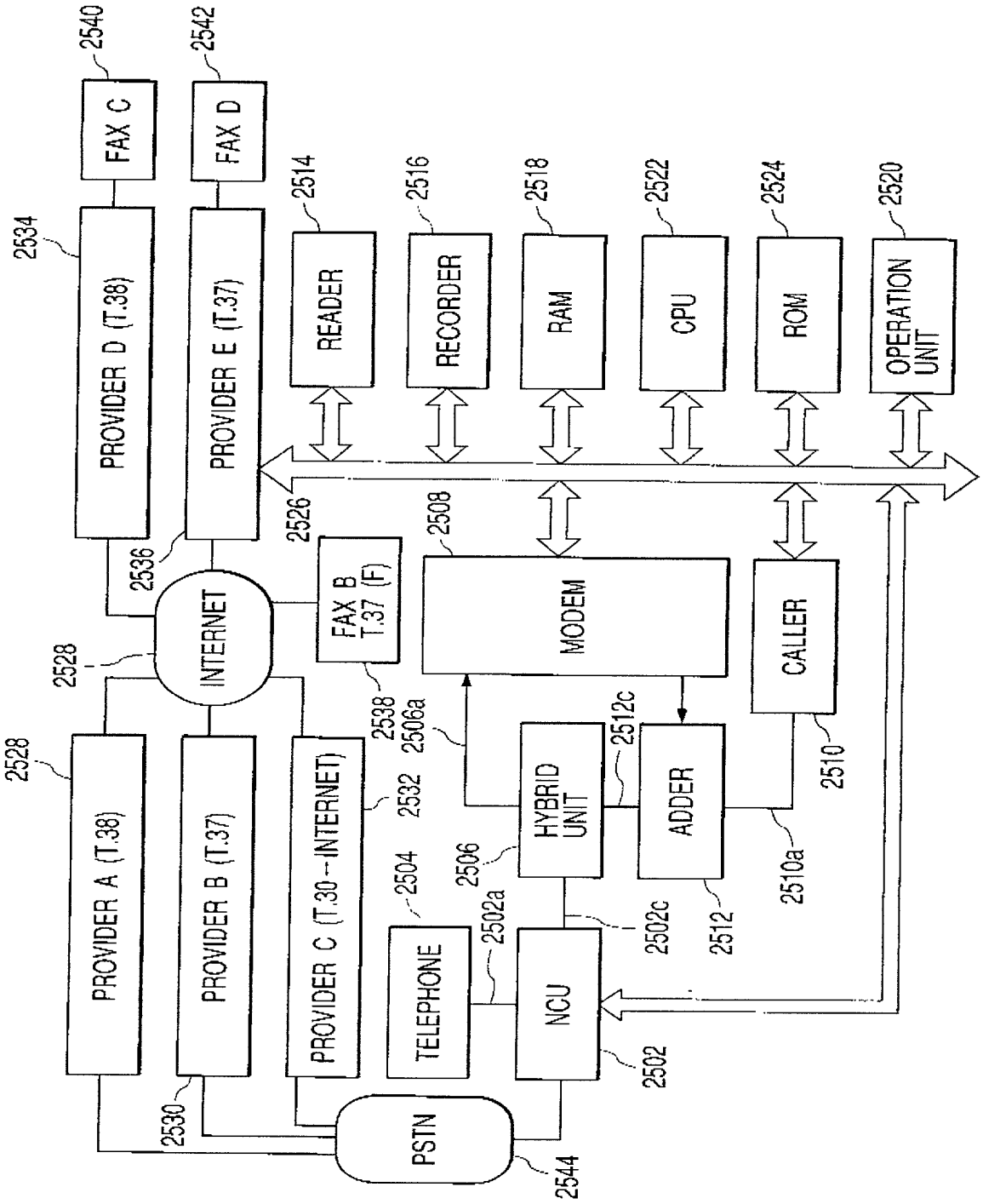
I-FAX aaa@canon.co.jp → abc@canon.co.jp 2000 01/06 10:24 P.001

****
*** RECEPTION
*** RESULT REPORT ***
****

ABNORMAL DSN MAIL WAS RECEIVED.

NO.	0002
SENDER ADDRESS	abc@canon.co.jp
SENDER NAME	CANON
START	01/06 11:12
DURATION	00'06
PAGES	1
RESULT	ACTION : DSN WITHOUT HEADER

FIG. 25


2540
FAX C
2542
FAX D
2534
PROVIDER D (T.38)
PROVIDER E (T.37)
2514
READER
2516
RECORDER
2518
RAM
2522
CPU
2524
ROM
2520
OPERATION UNIT
2526
2536
INTERNET
FAX B T.37 (F)
2508
MODEM
CALLER
2528
2538
2506a
2512c
2510
PROVIDER A (T.38)
PROVIDER B (T.37)
PROVIDER C (T.30--INTERNET)
2532
HYBRID UNIT
ADDER
2504
2506
2502a
2502c
2512
2510a
TELEPHONE
NCU
2502
2530
PSTN
2544

JP09289062A1 19971104

FIG. 26

NO.	SEND/RECEIVE	TO	RESULT	CONFIRMATION REQUIRED
0001	SEND	aaa.zzz.canon.co.jp	OK	–
0002	SEND	bbb.zzz.canon.co.jp	OK	T.37(S) ○ T.37(F) –
0003	SEND	03-3111-2222	OK	–
0004	SEND	hhh.yyy.canon.co.jp	OK	–
0005	SEND	ddd.zzz.canon.co.jp	OK	○
0006	SEND	eee.zzz.canon.co.jp	OK	–
0007	SEND	03-3111-1111	OK	–
0008	SEND	ccc.zzz.canon.co.jp	OK	○
0009	SEND	03-3333-3333	OK	–
0010	SEND	aaa.zzz.canon.co.jp	NG	ERROR